

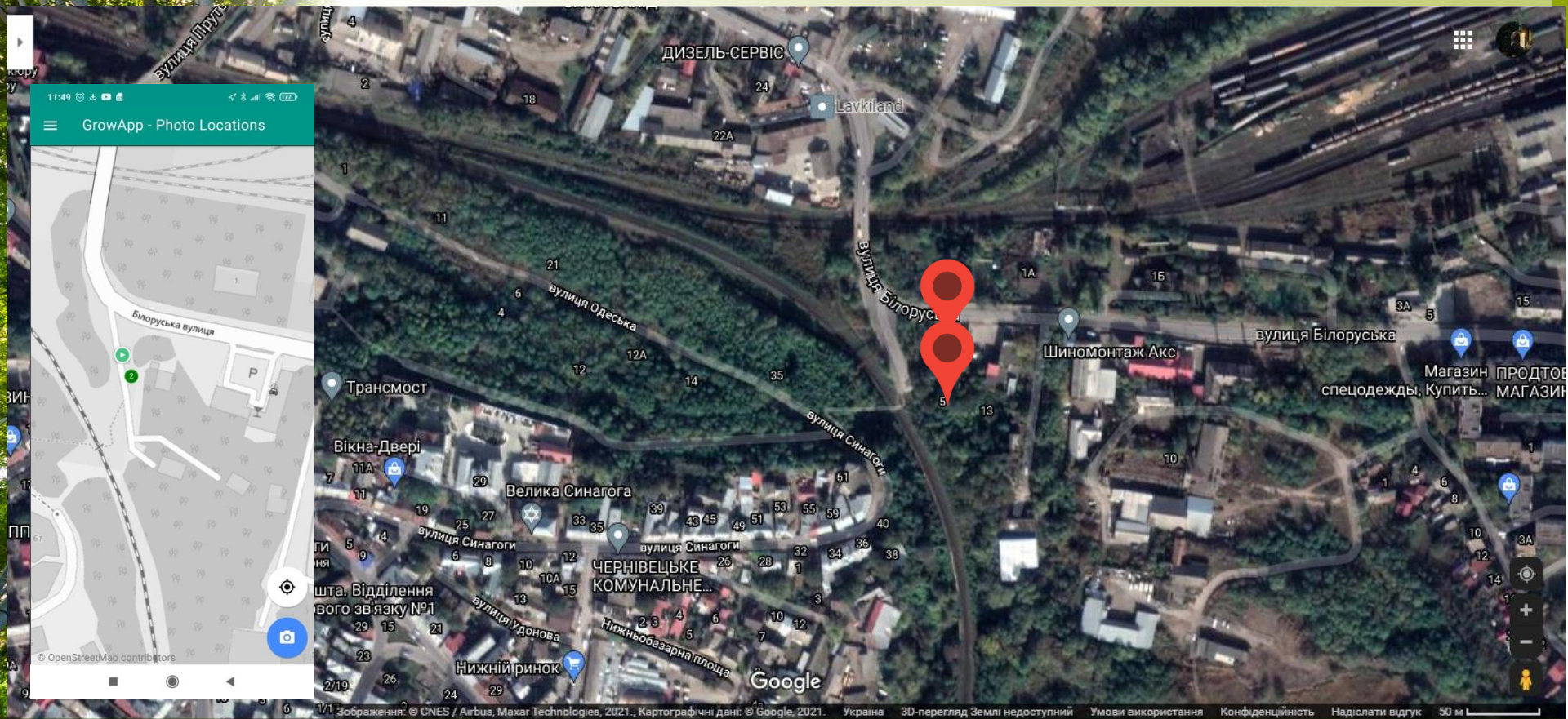
Chernivtsi City Ecology and Nature Center, Ukraine

the pupils of the "Fundamentals of Phenology" group

Present to your attention observation:

**THE INFLUENCE OF POWER LINES
ON THE DEVELOPMENT OF TREE
BETULA PENDULA**

Since 2019, the pupils of the "Fundamentals of Phenology" group have been observing two birch trees of *Betula pendula*



Birch 1 - a tree that grows in the open;

Birch 2 - is a tree that grows under a power line.



Birch 1





Birch 2


**This year, phenological observations began on
April 7, 2021.**



As can be seen from the table at the beginning of the observations no difference is seen in the development of buds

DATE	BIRCH 1	BIRCH 2
04/07/2021		

but in two weeks we can see the difference: in Birch 1 buds began to grow leaves, while Birch 2 leaves began to grow with a delay of 7 days, in a week.

DATE	BIRCH 1	BIRCH 2
04/21/2021		

DATE

04/25/2021

BIRCH 1



BIRCH 2



DATE


BIRCH 1

BIRCH 2

04/28/2021



According to the latest observations, the greening on both trees has leveled off, and the length of the leaves is on average 5 cm on the Birch branch1 and 7 cm on the Birch branch 2.

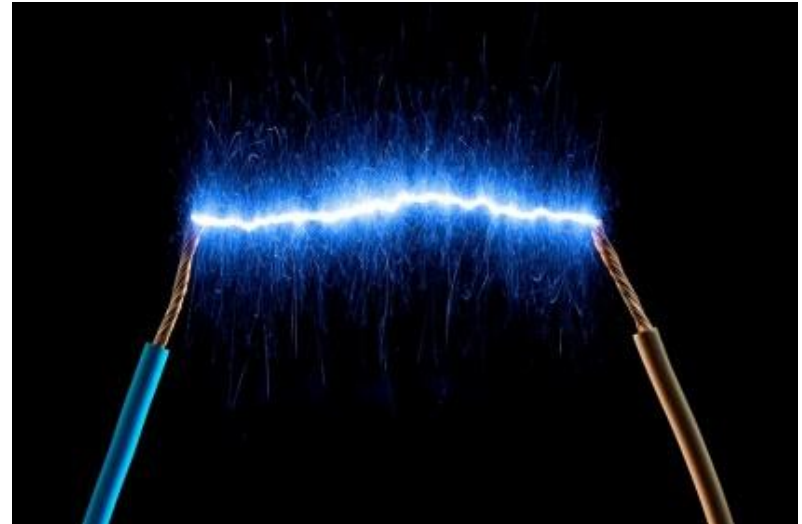
DATE	BIRCH 1	BIRCH 2
05/19/2021	 	 

Given the almost identical habitat of both trees, it was suggested that the difference in leaf development can be explained by the influence of the electromagnetic field (hereinafter - EMF).



These #1

Currently, the world scientific community recognizes that the electromagnetic field of artificial origin is an important significant environmental factor with high biological activity.



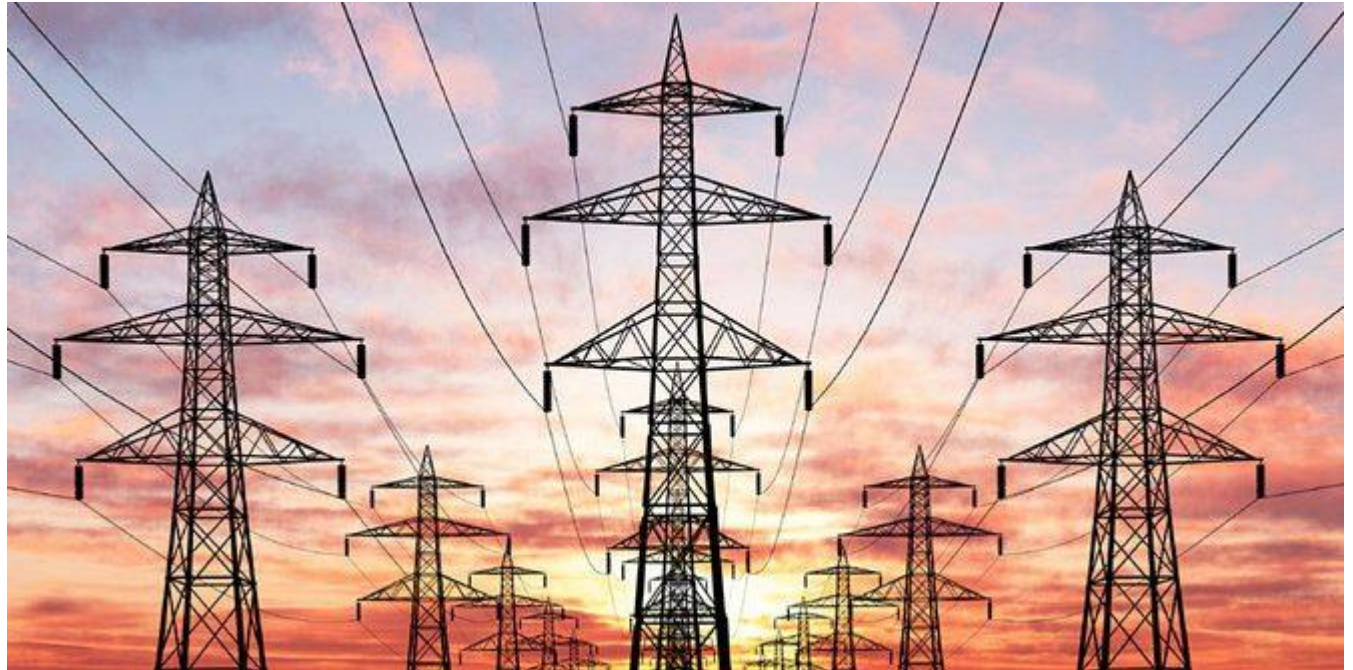
These #2

A sharp significant increase in the level of EMF causes stress of the adaptive-compensatory capabilities of the organism, long-term action of this factor can lead to their depletion, which will cause irreversible consequences at the system level [1].



These #3

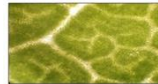
Today, one of the most common sources of electromagnetic radiation are power lines (transmission lines) [1].



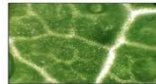
These #4

The influence of the electromagnetic field on the macroscopic parameters of plants is well studied. There was a slight damage to the leaf tissue at an exposure of 20 to 50 kV/m.

Воздействие магнитного поля на клеточную структуру растений



Лист фасоли, 1
контрольная группа



Лист фасоли, слабое
магнитное поле



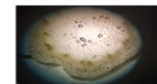
Лист фасоли, сильное
магнитное поле



Стебель фасоли, 1
контрольная группа



Стебель фасоли, слабое
магнитное поле



Стебель фасоли, сильное
магнитное поле

These #5

Experimental observations made in Florida on *Piriqueta caroliniana* (Walter) have shown that the fluctuation asymmetry (FA) * of the leaves is higher directly under the transmission line wires and at some distance from it.



These #6

Similar results were obtained for the asymmetry of soybean leaves *Glycine max* L. growing in the fields of Ohio, USA.



Conclusions:

Thus, in conclusion, we can say that the assumptions made by us during the observations are reasonable and require further more thorough research.



References:

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3. Изюмов Ю. Г., Таликина М. Г., Крылов В. В. ДЕЙСТВИЕ ЭЛЕКТРОМАГНИТНЫХ ПОЛЕЙ ЛЭП НА РАСТИТЕЛЬНЫЕ ОБЪЕКТЫ. Режим доступа: <https://cyberleninka.ru/article/n/deystvie-elektromagnitnyh-poley-lep-na-rastitelnye-obekty/viewer>